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A ◀ R ▶ S  
SCIENCE  
HALL  
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FAME

September 22, 1999

**Agricultural Research Service  
United States Department of Agriculture**



# Agricultural Research Service SCIENCE HALL OF FAME

The ARS Science Hall of Fame was inaugurated in 1986. We determined that each succeeding year, one or more present or former scientists with the Agricultural Research Service could be selected, subject to the following criteria:

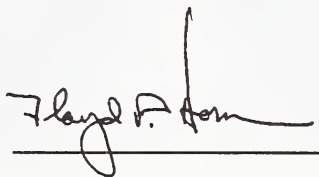
The selectee made a major impact on agricultural research, either by the solution of a significant agricultural problem through research or by providing outstanding leadership that significantly advanced agricultural research.

The selectee is a person whose accomplishments are still recognized by the agricultural research community.

The selectee's character and record of achievement are worthy of emulation by younger agricultural scientists.

The selectee's achievements must be or have been nationally and/or internationally recognized by peers in the scientific community.

Today we honor several outstanding scientists by inducting them into the Science Hall of Fame. A plaque citing the achievements of each will be on permanent display in the ARS National Visitor Center at the Beltsville Agricultural Research Center.

A handwritten signature in black ink, reading "Floyd P. Horn". The signature is written in a cursive style with a long, sweeping horizontal line extending to the right. Below the signature is a solid horizontal line.

Floyd P. Horn  
Administrator



## SCIENCE HALL OF FAME

**Allene R. Jeanes***(Posthumously)*

Research Chemist

National Center for Agricultural Utilization Research (NCAUR)  
Peoria, Illinois*For microbiological, chemical, and engineering research that created  
urgently needed, life-saving industrial polymers made from  
agricultural commodities.*

Allene R. Jeanes' research in microbial polysaccharides has resulted in products that have saved human lives the world over. In her early work at ARS, Jeanes studied the basic nature of starch. From this, she turned her attention to dextran. In 1950, she and a colleague proposed a project for producing dextran and converting it into synthetic blood plasma. The conflict in Korea accelerated the search for an acceptable substitute for blood plasma. As a result of the efforts of Jeanes and her team, a crash program was started at ARS and clinical dextran was in commercial production for military use by the end of 1951. It was used on the battlefields of Korea and Vietnam to save countless lives. The fluid that contains dextran, salt, and other additives to maintain life is today the agent most used as IV fluids.

Jeanes and her colleagues later turned their attention to isolating, characterizing, and finding applications for other microbial polysaccharides derived from cereal grains. From this effort came the industrial production and application for xanthan gum. One of the most widely used water-soluble thickening, stabilizing, and suspending agents in the world, xanthan gum is worth annual sales of about \$50 million in the food industry and about \$100 million in the oil and natural gas industry.

During her 35 years of service to USDA and in her retirement, Jeanes wrote more than 70 publications and 10 patents. She was awarded USDA's Distinguished Service Award in 1953 and the Department's Superior Service Award in 1968. In 1956, she was named Outstanding Woman Chemist of the Year by the American Chemical Society. She was the first USDA recipient of the Federal Woman's Award for her pioneering chemical research on starches and microbial polysaccharides. She died in 1995.







## SCIENCE HALL OF FAME

**Charles W. Stuber**

Supervisory Research Geneticist and Research Leader (*Retired*)  
Plant Science Research Unit  
Raleigh, North Carolina

*For pioneering the use of molecular markers in identifying, mapping,  
and manipulating quantitative trait genes.*



Charles W. Stuber is an internationally recognized pioneer in the use of molecular markers for identifying and mapping major genes in plants. Stuber's research has stimulated recent interest in DNA-based marker technology for improving crop traits, has led industry giants to revolutionize many of their crop breeding procedures, and is influencing animal breeding technology.

Early in his career, Stuber envisioned that biochemical (molecular marker) techniques could speed and broaden scientists' understanding of how quantitative traits of crops are inherited. His research lent credibility to the conclusion that major marker loci exist on chromosomes and that it should be possible to study them—a significant contribution to the science of plant and animal breeding.

Ever aware of practical applications, Stuber is the rare scientist who conducts large field testing programs of his basic research. Through carefully conducted field experiments, he has established valid associations of molecular markers with quantitative traits. Recently, he designed and is testing new breeding schemes based on molecular markers that will provide plant breeders with techniques to develop superior lines and hybrids more quickly and precisely.

Stuber and his colleagues worked on developing isozyme markers and generating isozyme profiles for corn. Today, the seed production industry widely uses isozyme analyses in evaluating seed purity, quality control, seed improvement, and positive identification of lines and hybrids.

Stuber served as president of the Crop Science Society of America, as well as its editor in chief, in addition to holding many other professional memberships. As a mentor, he has served on graduate advisory committees for more than 45 Ph.D. and M.S. candidates. Other professional contributions include almost 200 journal articles, reviews, and abstracts; invitational seminars; and papers presented around the world.



## SCIENCE HALL OF FAME

**Richard L. Witter**

Veterinary Medical Officer  
Avian Disease and Oncology Laboratory  
East Lansing, Michigan

*For outstanding research contributions and leadership  
in the field of avian tumor viruses.*



Richard L. Witter is a world-renowned authority on avian tumors, particularly Marek's disease, a devastating illness that costs the poultry industry millions every year. His research formed the basis for HVT vaccine, used worldwide to combat Marek's disease. It is estimated that the vaccine has saved the poultry industry more than \$100 million each year since it was introduced in 1971.

Witter recognized the phenomenon of protective synergism, a finding that resulted in improved vaccines for Marek's disease. He also contributed to the introduction of three new vaccines for Marek's disease into the U.S. market. In studies that spanned 15 years, Witter characterized three types of pathology produced by REV (nondefective reticuloendotheliosis virus) in chickens.

Most recently, Witter has served as a leader in planning and establishing a research consortium among Israel, Egypt, Jordan, the Palestinian Authority, ARS, and Ohio State University. The research program is expected to improve the diagnosis and control of two important viral infections of poultry in the Middle East.

Witter has received more than 20 awards, among them the Poultry Science Association Research Award in 1971, the USDA Distinguished Service Award in 1972 and again in 1985, the Pfizer Excellence in Poultry Research Award in 1998 from the American Veterinary Medical Association, and the Special Service Award in 1998 from the American Association of Avian Pathologists. He served as president of the American Association of Avian Pathologists, cochaired the 5th International Symposium on Marek's Disease, and has been an appointee to many professional committees. He has made more than 100 invitational presentations on personal research interests, biotechnology, research management, and poultry diseases. He was elected to the National Academy of Sciences in 1998.

# ARS SCIENCE HALL OF FAME

1986

**Edward F. Knippling**

*For pioneering research and leadership in development of the sterile insect technique, which led to the eradication of the screwworm, and of other technologies to suppress and manage insect pests.*

1987

**Howard L. Bachrach**

*For pioneering research on the molecular biology of foot-and-mouth disease that led to development of the world's first effective subunit vaccine for any disease of animals or humans through the use of gene splicing.*

**Myron K. Brakke**

*For consistent, career-long valuable contributions to the science of virology, particularly plant virology.*

**Glenn W. Burton**

*For outstanding achievements in forage and turf science, which have had extraordinary effects on the forage-based cattle industry, the turf industry, and agriculture worldwide.*

**Wilson A. Reeves**

*For outstanding research and leadership in the field of textile chemical finishing that have significantly benefited agriculture and consumers.*

**Earnest R. Sears**

*For pioneering work in wheat genetics and for discoveries on chromosomal mechanisms that established standards in animal, plant, and human genetics.*

**Orville A. Vogel**

*For development of the first useful semidwarf wheats and of innovative production systems that made the Pacific Northwest a major source of soft white wheat, inspired similar research efforts throughout the world, and sparked the Green Revolution.*

**Cecil H. Wadleigh**

*For elucidating the mechanisms through which crops respond to salinity and water stress and for inspired planning and leadership that enabled and motivated those who worked with him to expand and make use of knowledge of soils, water, and air and their interactions with plants.*

1988

**Francis E. Clark**

*For outstanding research leading to greater understanding of soil, plant, and microbial interactions and of nutrient cycling in terrestrial ecosystems.*

**Edgar E. Hartwig**

*For research in soybean breeding and genetics that has been a major factor in soybeans becoming the second most valuable U.S. crop and particularly for developing cultivars that thrive in the South.*

**Ralph E. Hodgson**

*For significant contributions to the knowledge of ruminant nutrition and for visionary leadership, both domestic and international, in the animal industries.*

**Hamish N. Munro**

*For career-long contributions to the science of nutrition, particularly on the relationship of dietary protein and iron to the health of the elderly, and for promotion of studies on aging.*

**Jose Vicent-Chandler**

*For research leading to new and greatly improved production systems for beef, milk, coffee, plantains, and rice for Puerto Rico and Caribbean countries.*

1989

**Douglas R. Dewey**

*For world leadership in genetics and taxonomy of the Triticeae tribe of grasses and for development of cytogenetic basis for creating new grass hybrids.*

**Theodor O. Diener**

*For conceptualizing and discovering viroids, for leading research on viroid detection and control, and for inspiring new approaches in the search for causes of several serious diseases affecting plants, livestock, and humans.*

**Karl H. Norris**

*For developing principles and instruments using the electromagnetic wave spectrum to make rapid nondestructive measurements for evaluating quality of agricultural products.*

**John F. Sullivan**

*For engineering contributions to the food-processing and preservation industries, including development of instant potato flakes and of batch and continuous-explosion puffing.*

1990

**Theodore C. Byerly**

*For extraordinary contributions as a scientist, research leader, and administrator to the success of agricultural research programs and advances in the U.S. and world agriculture.*

**Gordon Dickerson**

*For research contributions widely used by breeders to increase production efficiency of cattle, sheep, swine, and poultry.*

**Robert W. Holley**

*For isolation and characterization, including the first nucleotide sequence, of transfer ribonucleic acid (tRNA).*

**Virgil A. Johnson**

*For outstanding contributions to development of superior bread wheat cultivars and of improved wheat germplasm and for vigorous promotion of national and international cooperation among wheat breeders.*

**George F. Sprague**

*For outstanding contributions to effective methods of hybrid corn breeding and germplasm improvement.*

1991

**John H. Weinberger**

*For outstanding lifelong contributions in development of fruit varieties and fruit-breeding technology.*

**Walter H. Wischmeier**

*For developing the Universal Soil Loss Equation, which has been widely used for three decades worldwide in conservation and management of our natural resources.*

1992

**Raymond C. Bushland**

*For pioneering research leading to screwworm eradication by the sterile insect technique and for research leading to control of typhus vectors.*

**Lyman B. Crittenden**

*For significant contributions to retroviral genetics, transgenic animal development, and genome mapping in poultry.*



**Arnel R. Hallauer**

*For increasing understanding and use of quantitative genetics in plant breeding, which has led to development of many superior corn hybrids worldwide.*

1993

**John R. Gorham**

*For scientific leadership and studies that have resulted in solutions of disease control problems and have advanced the basic knowledge of viral and – genetic diseases in humans and animals.*

**Sterling B. Hendricks**

*(posthumously)*

*For significant contributions as a chemist, physicist, mathematician, plant physiologist, geologist, and mineralogist.*

**Clair E. Terrill**

*For scientific contributions and worldwide leadership in sheep production research*

1994

**Charles N. Bollich**

*In recognition of superlative accomplishments in rice breeding and genetics and their consequent benefits to American agriculture.*

**Chester G. McWhorter**

*For outstanding contributions to American agriculture through basic and applied research that has resulted in improved weed-management technology, increased yields, and reduced cost of production.*

**Malcolm J. Thompson**

*For career research contributions in the field of insect and plant steroid biochemistry.*

1995

**Harry Alfred Borthwick**

*In recognition of contributions in elucidating the importance of photoperiodic mechanisms controlling flowering in plants.*

**William M. Doane**

*For initiating, leading, and conducting research that created new and useful products and led to the establishment of new industries based on agricultural raw materials.*



**Walter Mertz, M.D.**

*For contributions and leadership in elucidating the importance to health of several trace elements and promoting research on dietary risk factors for chronic disorders.*

**1996**

**Fred W. Blaisdell**

*For pioneering research and development of improved structures for soil and water conservation.*

**Herbert J. Dutton**

*For pioneering research leading to the establishment of soybean oil as the predominant edible vegetable oil in the world.*

**Charles Jackson Hearn**

*For developing improved orange, grapefruit, and tangerine varieties used extensively by U.S. citrus producers to replace trees killed by the 1980 freezes and to expand the citrus acreage.*

**1997**

**Morton Beroza**

*For major contributions to the development of environmentally compatible insect control strategies through discovery of lures, attractants, repellents, and pheromones.*

**R. James Cook**

*For extraordinary research on sustainable approaches to improve wheat health and for leadership in the transfer of information and technology resulting in solutions to agricultural problems.*

**1998**

**Thomas J. Henneberry**

*For conducting basic and applied individual and team research that has had sustained global impact on development and implementation of integrated pest management systems.*

**James H. Tumlinson III**

*For research that led to eradication of the boll weevil from the southeastern United States and the discovery of the chemical basis of plant-insect-parasite interaction.*



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